

Downtown Transit Assets and Opportunities Study – Supplemental Model Runs & Ridership Forecasts

To complement the Downtown Transit Assets and Opportunity Study (TAOS), the Hillsborough MPO requested additional travel demand model runs by the Florida Department of Transportation during the development of the Tampa Bay Regional Planning Model (TBRPM) v 8.0 (also known as the 2040 model). The purpose was to test the effect of the proposed fixed guideway transit systems on travel patterns and to obtain ridership forecasts for the year 2040. The runs were prepared as part of the 2040 Plan needs assessment phase, so many roadway and bus service improvements were included as well. Because the runs were done as a part of model development, further technical analysis will be required as the project moves forward.

The model runs analyzed various segments and alignments identified as part of the TAOS final report, alone or in combination with other fixed-guideway transit concepts previously identified in the Long Range Transportation and/or TBARTA Master Plan. The segments included:

1. Converting the current streetcar system to a modern streetcar (tram) technology and extending it west to the Regional Intermodal Center in the Westshore Business District (the TAOS report “West Corridor”).
2. The “North Corridor” between downtown Tampa and the University of South Florida (USF), for which two alternatives were identified:
 - a. Extension of the streetcar north along Florida Ave., again using a modern tram (the “North Corridor-Modern Tram”); or
 - b. A Diesel Multiple Unit technology (DMU, a type of commuter rail) operating on the current CSX rail lines (the “North Corridor-DMU”).
3. Although not part of TAOS, other segments were also studied in this analysis, including:
 - a. An Automated People Mover system connecting Tampa International Airport (TIA) to the Westshore Regional Intermodal Center; and
 - b. An extension of the West Corridor across the Howard Frankland Bridge to St. Petersburg.
 - c. A DMU branch off the North Corridor west along the CSX track paralleling Busch Blvd. and Linebaugh Ave connecting to Clearwater and Downtown St. Petersburg.
 - d. A DMU extension north along the CSX track paralleling US 41 to Brooksville.

These were assembled into two alternative systems, one employing modern trams for both the West and North Corridors, and the other using modern tram for the West Corridor and DMU for the North Corridor with a connection Downtown.

Modern Tram Model Run Assumptions

To operate as an integrated system connecting USF, downtown Tampa, Ybor City and Westshore, the modern tram segments had to be “interlined” or linked together in a logical fashion so that transit vehicles could travel from one end of the system to the other. Figure 1 shows the model network and the interlined system. Each modern tram line was modeled with a 15 minute peak frequency and 20

minute off-peak frequency, so that with duplicated service the combined frequencies would be 7.5 minute peak and 10 minute off-peak.

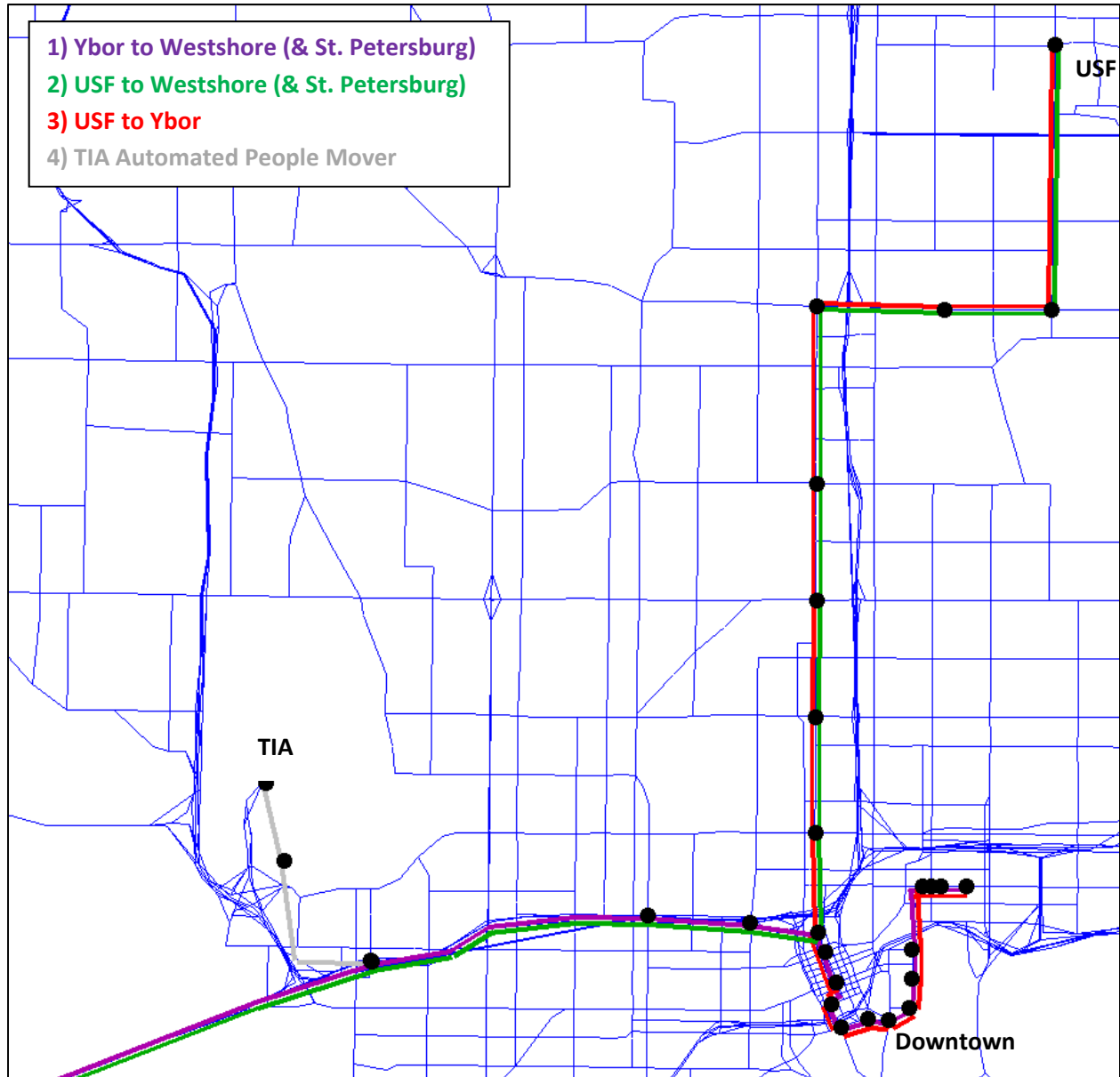


Figure 1 - Modern Tram Model Network, showing routes and stations

Modern Tram and DMU Model Run Assumptions

This model run uses a mix of technologies based on the assumption of availability of the existing CSX railways for the North Corridor. The modeled transit network includes the northern alignment between Downtown and USF, which is also interlined with two extended routes continuing (1) along US 41 to Brooksville and (2) along Linebaugh to Clearwater. The modern tram is modeled as an extension of the current streetcar, traveling west between Ybor and Westshore and continuing across the Howard Frankland Bridge. The modern tram had a 7.5 minute peak frequency and a 10 minute off-peak

frequency. The DMU lines, except the US 41 line, were modeled with a 15 minute peak frequency and a 20 minute off-peak frequency, but with the duplicate service between Downtown and Busch Boulevard, the frequencies would match the modern tram at 7.5 minute peak and 10 minute off-peak. The US 41 DMU line has a frequency of 30 minutes during the peak period and 30 minutes during the off-peak period. Figure 2 shows the modeled network for the modern tram and DMU.

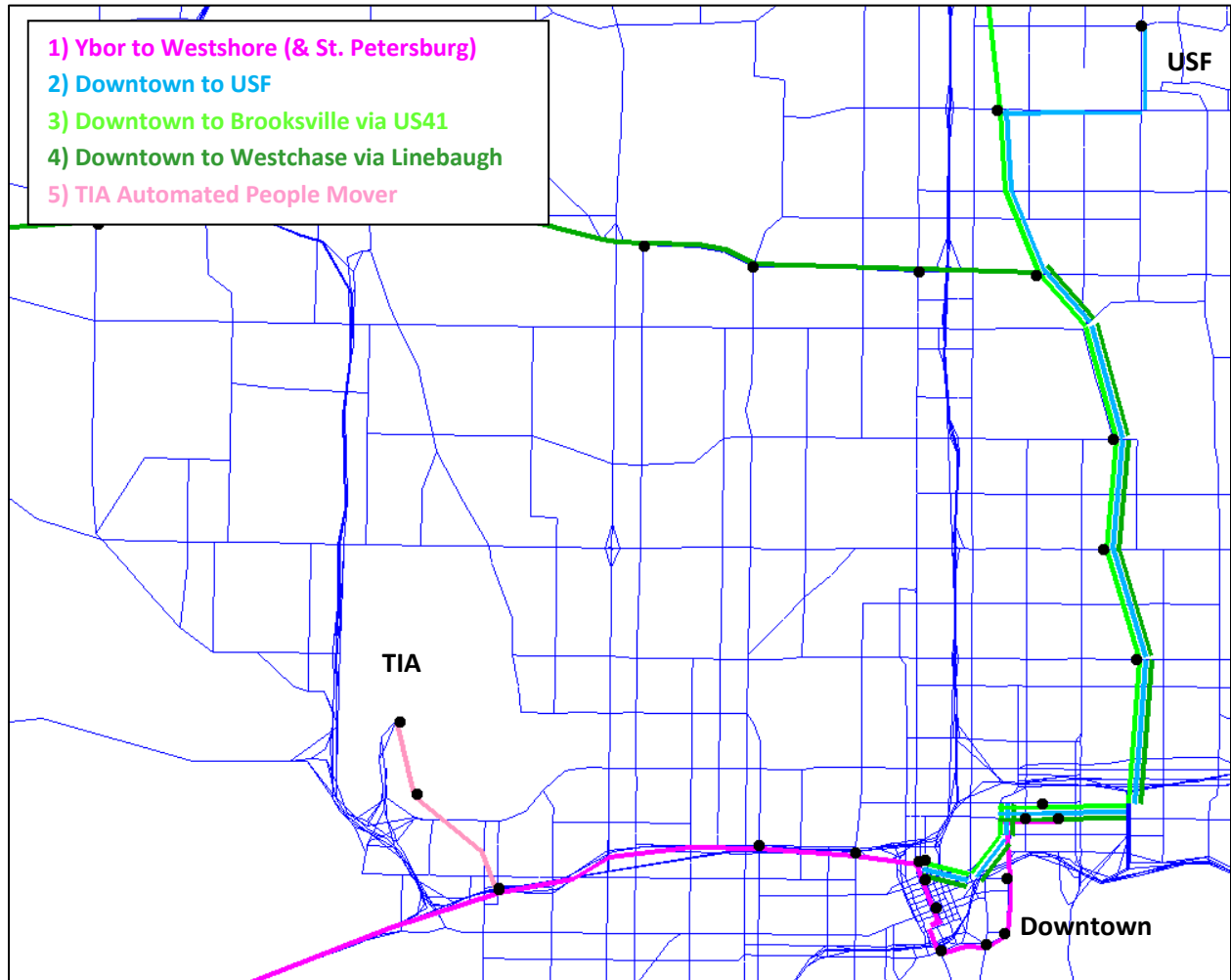


Figure 2 - Modern Tram & DMU Model Network, showing routes and stations

Thus, depending on whether the system consists of all modern tram segments or a combination of modern tram and DMU segments, riders would either be able to make “one seat” rides or they would need to make a linked trip (i.e., transfer from one line to another).

Integrated Feeder Bus Network

The Vision Plan described in HART’s Transit Development Plan (TDP) for FY 2015 – FY 2024 was modeled as the base transit network for all bus service in Hillsborough County. For each of the fixed-guideway alignments identified, the bus network was updated to provide the appropriate connections between transit modes. In the northwest portion of the county, feeder routes from the previous LRTP were modified to feed into the Busch-Linebaugh extension. Routes in Westshore were rerouted to serve the

proposed Westshore Multi-Modal Center, and MetroRapid services were adjusted to feed into nearby proposed stations. The purpose of this was to create a fully integrated transit network.

Results

Given the above assumptions regarding the 2040 horizon year, technologies, segments, operating characteristics and improvements to the overall network, the model runs produced the following forecasts:

Daily Ridership in 2040*		
	Alternative	
Corridor	Modern Tram	Modern Tram & DMU
North	6,922	5,929
West	10,330	12,702
TOTAL	17,252	18,631

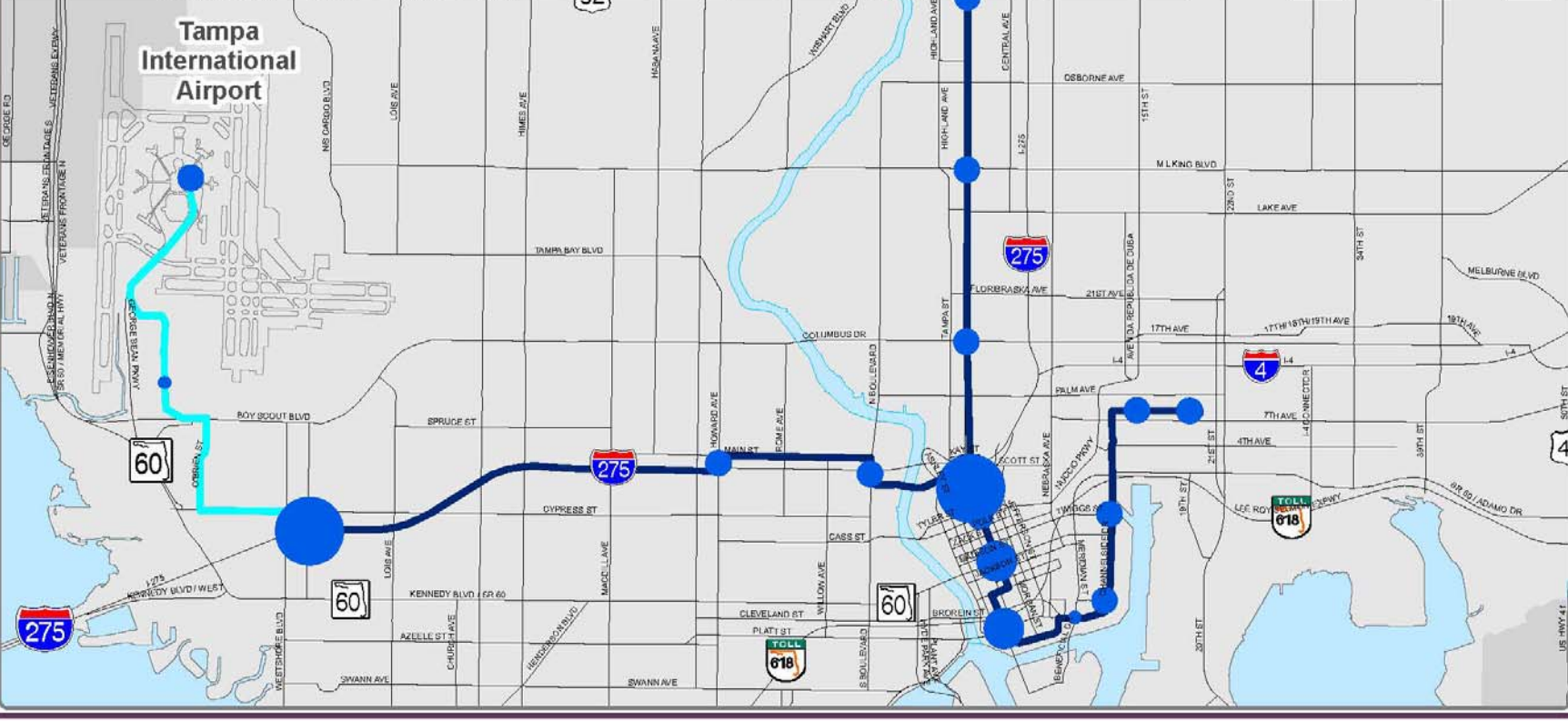
*Ridership is only for trips beginning and ending in Hillsborough County.

The forecasted ridership in the above table does not include ridership for the TIA people mover or ridership originating or ending in an adjacent county, since those fixed guideway segments were beyond the scope of the Downtown Transit Assets and Opportunities Study. The results of the runs are depicted in the following maps, and include supplemental tables showing the station activity for each segment and station in Hillsborough County. Station activity is defined as boardings and alightings, or people getting on and off. One transit rider would thus equate to one boarding and one alighting, so the station activity counts are twice as high as the ridership forecast for a station. Station activity is mapped in order to illustrate the significance of destination as well as origin.

2040 RIDERSHIP FORECAST MODERN TRAM ALTERNATIVE

Station Activity (On's & Off's)						
Service Patterns						
Rail Segments	Ybor to WS	USF to WS	USF to Ybor	TOTAL	North Corridor	West Corridor
USF to Downtown		5,570	6,896	12,466	12,466	
Ybor to Downtown	4,361		5,057	9,418		9,418
Downtown to WS	8,787	9,609		18,396		18,396
TIA People Mover				1,774		
WS to St Pete	11,295	11,730		23,025		
TOTAL	24,443	26,909	11,953	65,079	12,466	27,814

North & West Corridors by Station	Ybor to WS	USF to WS	USF to Ybor	TOTAL
Westshore IMC	4,840	4,435		9,275
Howard & I-275	676	715		1,391
Boulevard & I-257	712	783		1,495
Downtown/MTC	2,559	3,676	1,737	7,972
Florida & Columbus		612	488	1,100
Florida & MLK		621	405	1,026
Florida & Hillsborough		717	638	1,355
Florida & Sligh		168	154	322
Florida & Busch		994	839	1,833
Busch & CSX		351	278	629
Busch & 30th		1,131	1,697	2,828
UATC		976	660	1,636
Marion & Cass	525		547	1,072
Franklin & Kennedy	1,377		1,557	2,934
Convention Centre	549		544	1,093
Ice Palace	113		59	172
Aquarium	445		931	1,376
Channelside & Madison	338		413	751
Ybor & 15th	545		555	1,100
Ybor	469		451	920
TOTAL	13,148	15,179	11,953	40,280



Legend

Rail Stops

Total Daily Station Activity (On's and Off's)

- 0 - 500
- 501 - 1,500
- 1,501 - 3,000
- 3,001 - 5,000
- 5,001 - 10,000

Modern Tram
 TIA People Mover

Urban Service Area
 Hillsborough County
 Pinellas County
 Tampa
 Plant City
 Temple Terrace

Water and Bay
 Streams/Rivers
 County Boundary
 Major Roads
 Airports
 Airfields

Location Diagram and Reference Information

Hillsborough County, Florida

DATA SOURCES: Base map, roads, water from Hillsborough County City-County Planning Commission. Parcel Lines and data from Hillsborough County Property Appraiser. Wetlands from SDFVAD. Significant Wildlife Habitat from Planning and Development Management, based on satellite imagery. Only wetlands greater than 40 acres depicted.
MAJOR ROADS: See Adopted MPO Long Range Transportation Plan for specific improvements.
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ACCURACY: It is intended that the accuracy of the base map comply with U.S. national map accuracy standards. However, such accuracy is not guaranteed by the Hillsborough County City-County Planning Commission. This map is for illustrative purposes only for the cities of Tampa, Temple Terrace and Plant City.

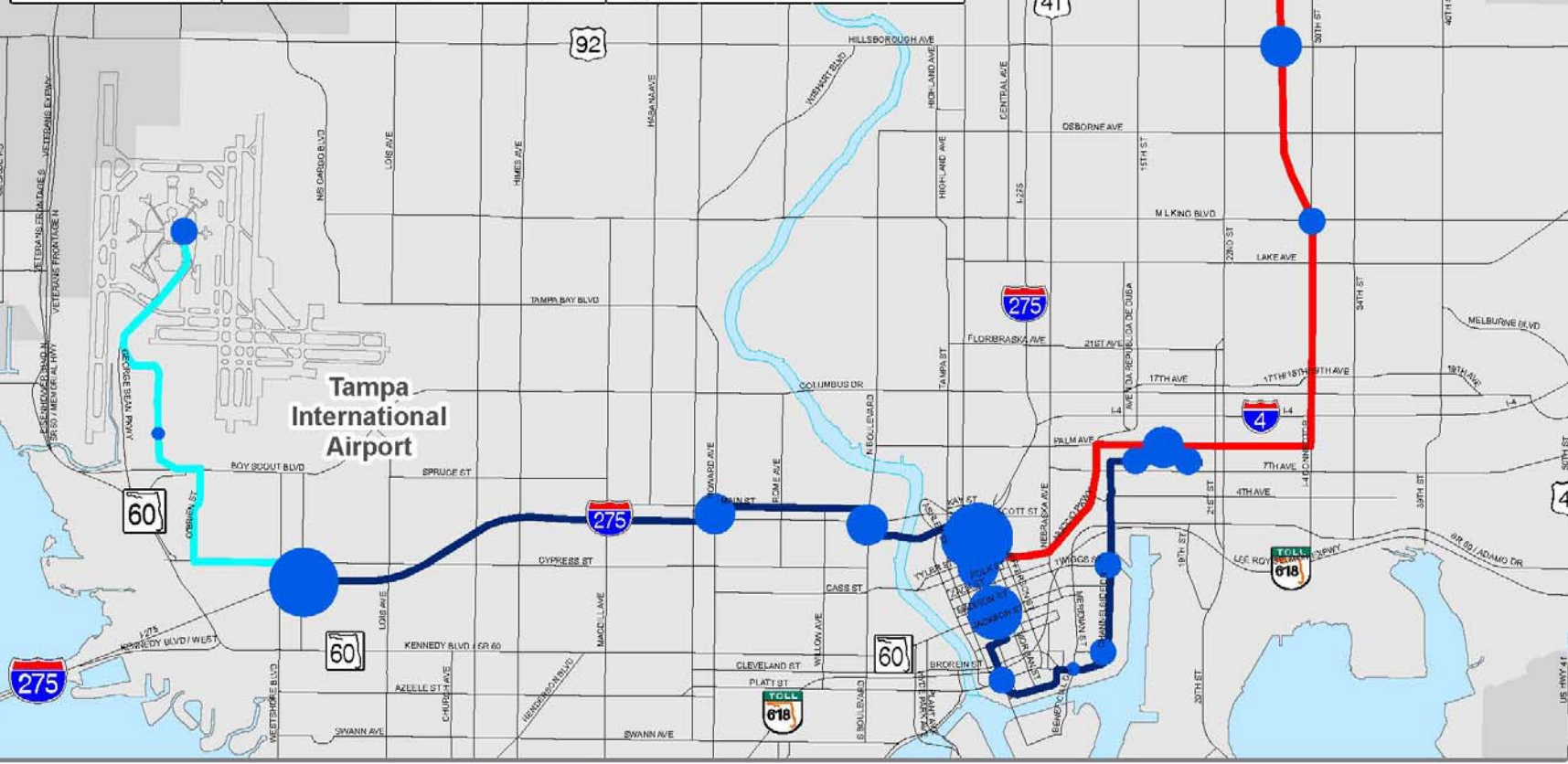
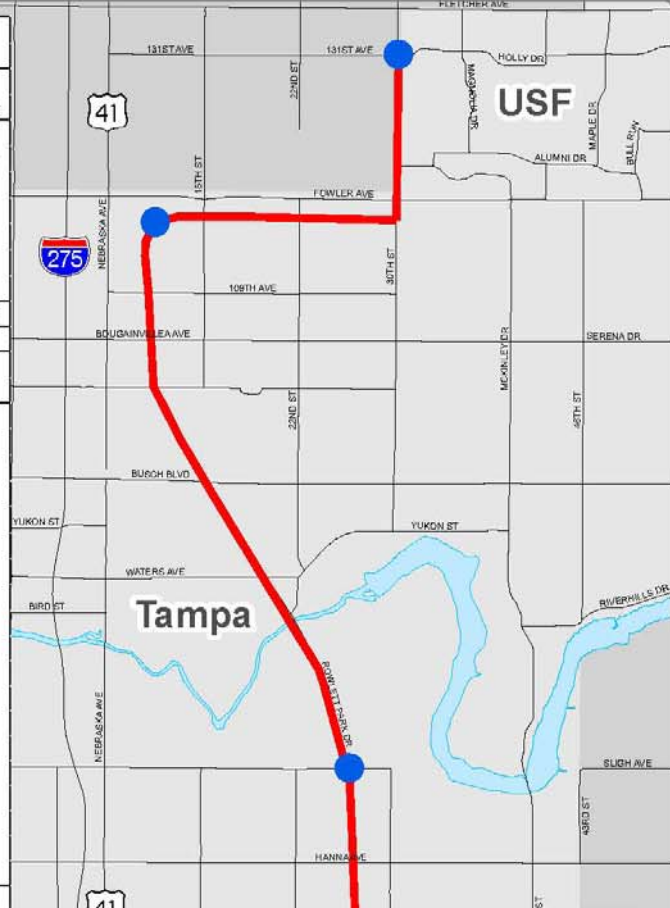
Author: Roger Mathie
Date: 4/3/2015

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Station Activity (On's & Off's)							
Service Patterns							
Total Station Activity by Rail Segments	Modern Tram Ybor to WS	USF to Downtown DMU	Busch/ Linebaugh DMU	TIA People Mover	TOTAL	North Corridor	West Corridor
Ybor to Downtown	12,897				12,897	12,897	12,897
Downtown to WS	18,598				18,598		18,598
WS to Downtown St. Pete	27,519				27,519		
Downtown to Sligh		4,586	6,271		10,857	10,857	
Sligh to USF		2,768			2,768	2,768	
Sligh to County Line			4,553		4,553		
TIA People Mover				2,227	2,227		
TOTAL	59,014	7,354	9,820	2,227	78,415	13,625	31,495

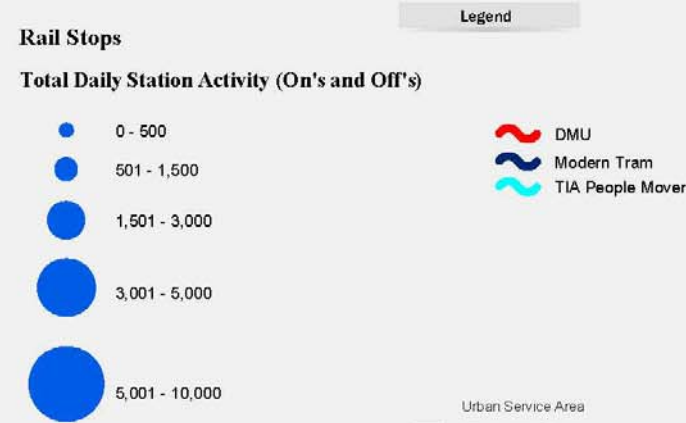
North & West Corridors by Station	Modern Tram Ybor to WS	USF to Downtown DMU	Busch/ Linebaugh DMU	TOTAL
Westshore IMC	11,417			11,417
Howard & I-257	1,577			1,577
Boulevard & I-257	2,002			2,002
Downtown/MTC	3,602	2,143	2,438	8,183
Ybor	1,057			1,057
Ybor & 15th	1,243			1,243
Channelside & Madison	937			937
Aquarium	852			852
Ice Palace	371			371
Convention Centre	1,374			1,374
Franklin & Kennedy	4,666			4,666
Marion & Cass	2,397			2,397
Ybor & CSX		744	885	1,629
MLK & CSX		431	513	944
Hillsborough & CSX		1,268	1,431	2,699
Sligh & CSX		271	327	598
Busch & CSX		603	677	1,280
Fowler & CSX		683		683
UATC		1,211		1,211
TOTAL	31,495	7,354	6,271	45,120



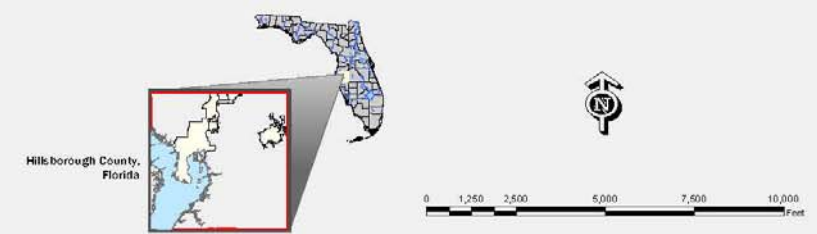
Transit Assets & Opportunities Study Supplement

2040 RIDERSHIP FORECAST

MODERN TRAM & DMU ALTERNATIVE



Location Diagram and Reference Information



DATA SOURCES: Base map, roads, water from Hillsborough County City-County Planning Commission. Parcel Lines and data from Hillsborough County Property Appraiser. Wetlands from SFWMD. Significant Wildlife Habitat from Planning and Development Management, based on satellite imagery. Only wetlands greater than 40 acres depicted.

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